

MINUTES

CALIFORNIA TRAFFIC CONTROL DEVICES COMMITTEE MEETING OF July 22, 1999

The second meeting of the CTCDC in 1999 was held in the Caltrans District 11 Auditorium, in San Diego, on July 22, 1999.

Chairman Ray Mellen opened the meeting at 9:03 a.m. with the introduction of members and guests. The Chairman thanked District 11 for the use of their building for the meeting. He also stated that Laura Heffley would act as Executive Secretary in the absence of Jack Kletzman.

The following members, alternates, and guests were in attendance:

ATTENDEES	ORGANIZATION	TELEPHONE
Members (Voting)		
Ray Mellen Chairman	Auto Club of Southern California, Costa Mesa	(714) 885-2301
John Wallo Vice Chairman	California State Association of Counties, County of San Luis Obispo	(805) 781-4466
Lt. Teresa Becher	California Highway Patrol, Sacramento	(916) 657-7222
Dick Folkers	League of California Cities, City of Palm Desert	(760) 346-0611
Dwight Ku	California State Automobile Association, Sacramento	(916) 443-2577
Farhad Mansourian	California State Association of Counties, County of Marin	(415) 499-6570
Gerry Meis	California Department of Transportation, Sacramento	(916) 654-4551
Wayne Tanda	League of California Cities, City of San Jose	(408) 277-4945

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ATTENDEES	ORGANIZATION	TELEPHONE
Mel Araki	Caltrans, Los Angeles	(213) 897-4981
Richard Backus	ACSC	(714) 885-2326
Hamid Bahadori	City of Orange	(714) 744-5534
Les Beckwith	Polara Engineering	(714) 521-0900
Sandy Champion	CHP	(916) 657-7222
Mario Domen	Caltrans, Los Angeles	
John Fisher	Caltrans, Los Angeles	(213) 580-1189
Brian Gallagher	City of Los Angeles	(213) 580-5398
Mark Greenwood	City of Palm Desert	(760) 776-6450
Trev Holman	City of El Cajon	(619) 441-1665
Ed Kralskowski	City of El Cajon	(619) 441-1651
Jim Larsen	CSAC	(559) 733-6291
Gene Lozano	California Council of the Blind	(916) 278-6988
Lynn Mack	Polara Engineering	(714) 521-0900
Jenna McKhann	Nextech	(714) 289-8940
Patricia Montes de Oca	CAOMS	(323) 343-4411
Tom Parry	County of San Diego	(858) 874-4009
David Pelz	City of Davis	(530) 757-5686
David Royer	University of California, ITS	(661) 255-6556
Peggy Rubach	Rubach & Associates	(602) 553-8908
Grace Wong	Caltrans, Los Angeles	
Lewis Yee	Caltrans, Los Angeles	(213) 897-0253

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MOTION: By Dick Folkers, second by Gerry Meis, to adopt the minutes of the San Rafael meeting, held on March 18, 1999. Motion carried 5-0. Fährad Mansourian, John Wallo, and Ray Mellen abstained from voting due to absence from the previous meeting.

MEMBERSHIP

Mr. John Wallo was given recognition for his service on the committee as he prepares to retire. Mr. Wallo recommended that Jim Larsen his alternate be appointed to the committee in his place, and that Tom Parry be the new alternate. John Presley is a new alternate member of the committee, representing CSAC.

90-7 BICYCLE SIGNAL HEADS

Dave Pelz, Director of Public Works for the City of Davis, and chairman of the California Bicycle Advisory Committee, began by stating that the legislation seems to be moving through and in good order. It is at the third reading in the Senate, and when the Legislature gets back in session, with Senator Thomson carrying the bill, it will be addressed for a vote. The committee has put forth that the warrants be in place and confirmed by the time the legislation becomes effective. Pelz noted that in the original draft it stated that a bicycle signal head was needed when both the volume and collision warrants are met. The new draft states that either warrant can be met and a bicycle signal head used. Wayne Tanda questioned what the warrant 3B meant. Pelz responded that there are several intersections where movements of bicycles can be permitted that are not available to motor vehicles. There are instances where intersections have been modified to prohibit movement of vehicles into a residential area where allowing bicycle movement would be appropriate. A special signal can help those types of situations. Gerry Meis suggested the committee members take the issue back with them, discuss it with their staff and report back at the next meeting. Meis also commented that with only a single geometric warrant required, there might be a problem with bicyclists excessively requesting signal heads. Comments by the committee on this issue are to be back to Gerry Meis or Jack Kletzman by the first of October.

ACTION: Item continued.

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94-10 PEDESTRIAN SIGNAL HEAD

Item tabled.

ACTION: Item continued.

96-3 ILLUMINATED LEFT TURN YIELD SIGNS

Jim Helmer and Jaime Rodriguez from the City of San Jose showed a presentation on improvements to traffic signal operations concerning permitted/protected signal phasing. After research in and around the city of San Jose it became a concern that there was significant motorist confusion as to what to do at permitted/protected or vice versa signals during certain phases. They came to the CTCDC in 1996 requesting experimentation on a dynamic illuminating left turn yield sign that went on and off according to the phase. Several surveys were conducted to determine if the extinguishable illuminated sign was any more confusing than the other signing options, what sign the public preferred and which of the sign options was most effective. After a pilot survey was conducted, 6 surveys were created that would include all possible scenarios of signing.

A second set of surveys tried to determine what signs motorists found most desirable. Using the four section head for permitted/protected movements, there was no confusion at all when just the green light was displayed. In the surveys first finding, 95% of all respondents understood best with no sign at all, 95% also understood it best using the illuminated sign and 90% understood it best alongside the static sign, the R-73. A second finding of the survey found that under the permitted/protected signal phasing when motorists saw both a green ball and green arrow, no matter which sign was used, some confusion occurred. 90% of respondents understood best with no sign at all. 76% understood with a static sign, and approximately 82% understood with the illuminated sign. In closing, Helmer stated that the dynamic sign was clearly less confusing than the static R-73 sign, that the public's preference is the dynamic sign, and that the left-turn yield sign is the most effective of the two signs.

MOTION: By Dick Folkers, second by John Wallo, to recommend Caltrans accept the dynamic illuminating left-turn yield sign in place of the current R-73. Motion carried 8-0.

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96-3 ILLUMINATED LEFT TURN YIELD SIGNS (continued)

ACTION: Item completed.

98-2 FLASHING YELLOW ARROW SIGNAL

Dick Folkers asked the agenda item be terminated due to lack of response from the requester.

MOTION: By Dick Folkers, second by Gerry Meis, to terminate item from agenda.

Motion carried 8-0.

ACTION: Item terminated.

99-1 GAPS FOR PEDESTRIAN CROSSINGS

Ray Mellen reported that Norman Sucher has observed that there are conflicts between the national manual, the MUTCD and the Caltrans Traffic Manual. There is an issue of gaps versus volume in deciding if the warrants for signals and flashing beacons should be changed to consider the width of streets and traffic gaps. Gap warrants are what are considered in the national manual, while volume warrants are what is considered by the California Traffic Manual in determining the need for pedestrian signals. Sucher has said that this might be an issue to be brought to Caltrans attention. John Wallo requested that the issue be forwarded to Caltrans for resolution. Wayne Tanda suggested that regardless of what Caltrans decides on this issue, he would like the committee to discuss the decision further.

MOTION: By Wayne Tanda, second by Dick Folkers, to forward this item for resolution by Caltrans and then be brought to the committee for discussion. Motion carried 8-0.

ACTION: Item continued.

99-3 AUDIBLE PEDESTRIAN SIGNAL POLICY

Dick Folkers began by saying that the hearing-impaired would have a difficult time using the audible signal and that both fully capable and impaired pedestrians should be able to utilize the device.

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99-3 AUDIBLE PEDESTRIAN SIGNAL POLICY (continued)

Peggy Rubach on behalf of the California Council for the Blind stated there should be a section in the update to the MUTCD on accessible pedestrian signals. Ms. Rubach reported that the CCB adopted two resolutions regarding accessible pedestrian signals and that additional research should be conducted.

Teresa Becher questioned if the Federal Highway Administration looked at collision statistics regarding lack of audible signals. Ms. Rubach explained that they had included traffic accident data and surveys of users of accessible signals in their report and found that the North-South, East-West audible signals were confusing at times.

Wayne Tanda questioned whether all forms of pedestrian signals were being tested, or simply audible signals. Rubach replied that all forms were being tested and that she recommended having both present at intersections.

Gene Lozano representing the CCB, serves as chairman on the Committee on Access and Transportation. He stated that their first resolution requires that for each leg of an intersection that a pedestrian is able to cross, that it be equipped with an accessible pedestrian signal. The second resolution of the CCB reaffirms the support of existing state guidelines for bird calls. They urged that a priority be put on installing audible signals at new intersections and upgrading old intersections. There should be no installation of further audible signals until further research by independent researchers has been conducted. There needs to be some standardization of how the current audible signals are being installed.

John Fisher stated that there are now many more devices that could improve pedestrian crossing and that these should be looked into. Fisher also stated that the Signal Technicals Committee has advised that the installation of accessible signals not be required, but that certain standards be followed if accessible signals are to be installed.

Patricia Montes de Oca, representing the California Association of Mobility Specialists, stated that visually impaired pedestrians do not need audible signals to be able to cross the street safely. She added that adaptive technology for the visually impaired is necessary, but not at every intersection. CAMS does not support the use of audible signals at every intersection and further believes it can be dangerous to the visually impaired to do so. Montes de Oca cited an example that with intersections

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99-3 AUDIBLE PEDESTRIAN SIGNAL POLICY (continued)

having more than 4 legs and therefore have more than 2 pedestrian phases, there are no additional sounds for the remaining legs of the intersection. In the case of a right turn island, a pedestrian may not know that the signal only indicates a safe crossing from the island to the other side of the street, but not from the sidewalk to the island. Montes de Oca noted that a newer vibrotactile device which has a vibrating arrow to indicate when it is safe to cross, makes it less confusing for a visually impaired person to know when and which direction they can safely cross. The disadvantage is that the pedestrian must have their hand placed on the device which limits the amount of people who can use it at once. It is an alternate device which can be helpful in intersections containing multiple lanes, those with right-turn islands, and those with oppose-phasing, and split-phasing. In addition, Montes de Oca noted that there have been several occasions where neighbors adjacent to intersections with audible signals have complained due to the noise the audible signals make.

Brian Gallagher from the City of Los Angeles recalled that after researching with staff from the Braille Institute they came up with some standards that would designate whether an intersection would benefit from having an audible signal or not. These results were published in the Journal of Visual Impairment and Blindness (1998). He agreed with Patricia Montes de Oca in the circumstances that she stated where audible signals would be more dangerous than helpful. In November of 1996 a vibrotactile indicator test device was installed. Since that time there have been 13 of these devices installed and no malfunctions have occurred in any of the devices. A study was conducted by the City of Los Angeles along with the Braille Institute using visually impaired person ages 25-70 with varying degrees of vision. Gallagher stated the results of the study as follows: 100% of users crossed the intersection at the appropriate time, 97% found the device very easily with 3% finding it with some difficulty, 100% felt the vibration very noticeably, and 99% said they felt confident to cross the street upon the arrow vibrating, with 1% stating they were not positive but thought so. Gallagher continued to state that the cost of the vibrotactile device is approximately \$25.00 less than an audible signal device and visually impaired pedestrians can be educated on how to use vibrato-tactile devices just as easily as with audible signals. John Wallo questioned if the vibrato-tactile device would be appropriate for all intersections. Gallagher responded that the vibrotactile device

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99-3 AUDIBLE PEDESTRIAN SIGNAL POLICY (continued)

would not be installed at all intersections, but instead at intersections that were complex or confusing for visually impaired pedestrians to cross the street simply by audible signals.

Ray Mellen noted that the changes to the MUTCD proposed by Brian Gallagher included an optional braille message, though his demonstration device did not. Patricia Montes de Oca responded that it is an option that is available for the device. Teresa Becher questioned if the vibrotactile device made an audible sound and if that would confuse pedestrians. Montes de Oca responded that the visually impaired are taught to feel for the vibration of the arrow and not to listen for any type of hum that might be emitted from the device as an indication to cross.

Lynn Mack, a representative from Polara Engineering, stated that the vibrotactile device can be retrofitted to existing push-button pedestrian devices. There is also an additional device that is non-retrofit that can be customized with a braille message.

Dick Wallo questioned what the standard was for determining if a vibrotactile device was necessary. In response, Gallagher noted that there is a worksheet used by the City of Los Angeles that determines if the intersection needs that type of device. There are two criteria that must be met including a demonstration of need either by an individual or by a group, and there must be a certain level of complexity in the intersection that warrants the use of a vibrotactile device. Mr. Lozano stated that the CCB would not be able to support the proposal as is. Although, if the language stated that both the audible and vibrotactile could be used together after extensive and objective research was done it would be supported by the CCB. Lozano mentioned that although the device sounded acceptable, nothing would guarantee that its installation would always meet the standards making it easy for visually impaired pedestrians to use. He recalled that currently there are push-button devices that are not to standard, and the devices cannot be easily found. One of the standards in the national guidelines is that if you have a push button locator sound, there is to be an audible sound for the walk phase which must be at the same volume level as that of the locator sound. In closing, Gene Lozano stated that the California Council of the Blind would be in support of the language to be placed in the MUTCD if both the

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99-3 AUDIBLE PEDESTRIAN SIGNAL POLICY (continued.)

audible and any additional devices were used in conjunction with each other. He also requested that the City of Los Angeles do further testing and in the meantime continue using the audible signal at intersections.

Patricia Montes de Oca commented that it would most likely be too expensive for cities to install both an audible and vibrotactile device at intersections.

John Wallo suggested that the City of Los Angeles submit an application for experimentation.

MOTION: By Wayne Tanda, second by John Wallo, to recommend that the two parties consult with each other about reaching a compromise and take action on the item at the next meeting. Motion carried 8-0.

ACTION: Item continued.

99-8 MUTCD EXPERIMENTAL PROCESS

Gerry Meis suggested that the item be moved to a later meeting.

ACTION: Item continued.

99-9 LED ENHANCED PAVEMENT MARKERS

Hamid Bahadori began by thanking Dick Folkers for sponsoring the item to be on the agenda. Bahadori stated that he is from the City of Orange and wants to improve traffic safety with the least amount of expenditure. Bahadori believes that led enhanced pavement markers are not a new device that need to have experimentation, and that instead they are just an improvement on the current pavement markers.

Bahadori does not want to advocate the usage of the enhanced markers until he has gained the approval of the committee. He says they can be used wherever normal pavement markers are currently being used and that the City of Orange is committed to testing them at various determined intersections upon approval of the committee.

Jenna McKhann from Nextech began a presentation of the enhanced markers and stated that in the MUTCD it states that a pavement marker must define the path of safe travel and must be clearly visible in daylight, darkness and periods of adverse weather such as rain and fog. She also mentioned that Nextech intended to create a

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99-9 LED ENHANCED PAVEMENT MARKERS (continued.)

product that would withstand all weather conditions including one type that is fog sensitive and would illuminate only upon those conditions. It gives the driver much more reaction time, and more time to correct a turn. McKhann noted that road departure and reduced visibility at night are the leading causes of accidents and this device helps to solve those problems effectively. It serves many purposes and can be used just as a normal pavement marker would be used.

Gerry Meis commented that the product is not on the Caltrans approved list, and has not been tested on the roadway for durability. Meis added that with LED pavement markers intended to increase lane visibility in fog there is the concern that motorists will increase their speed because of the increased visibility of the roadway. Ray Mellen asked if Caltrans intends to further test the enhanced markers. Meis stated that to the best of his knowledge there was no testing being done by Caltrans for the enhanced markers, and that Kern County was planning to test them. John Fisher commented that because the enhanced pavement markers flash instead of remaining steady, he questioned whether motorists would see them as a warning flasher instead of a lane indicator. Jenna McKhan answered that the frequency of the flash is so rapid that it looks like a steady light. Wayne Tanda commented that he is concerned about treating the enhanced pavement markers as normal markers because with past devices in this same situation problems arose that were not anticipated. Jim Larsen noted that in the traffic manual it mentions the retroreflective sleeves on cones for delineation and that there is a provision for internally illuminating cones also. Ray Mellen asked if the committee would be opposed to asking Caltrans to do a preliminary review and determine by reviewing the specifications if it is actually identical to an existing pavement marker. Teresa Becher noted that if the enhanced roadway pavement markers were accepted as a device, the traffic manual should reflect some maximums regarding wattage, illumination, etc. Ray Mellen suggested that the committee ask the City of Orange to submit a formal experimentation application.

MOTION: By Dick Folkers, second by John Wallo that the committee authorize the City of Orange to approach the committee with a formal experimentation process and that Caltrans review whether the device is a roadway pavement marker. Motion carried 7-0. Gerry Meis abstained.

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99-9 LED ENHANCED PAVEMENT MARKERS (continued.)

ACTION: Item continued.

99-10 TACTILE PEDESTRIAN INDICATORS

See item 99-3 for discussion.

99-11 MUTCD ADOPTION BY CALTRANS

38/50 states have adopted the MUTCD as their state traffic manual. No separate manual. Or develop a state supplement. The MUTCD is undergoing a rewrite and it is expected to be completed by December 2000. Workshop to be conducted on this issue on the 18th of November in Sacramento. Meis suggested that it not be an item until the first meeting of 2000.

ACTION: Item continued.

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INFORMATION ITEMS

**Item 99-A MEXICAN DRIVER COMPREHENSION OF U.S. TRAFFIC
CONTROL DEVICES**

Dick Folkers began by commenting that there was a situation where a Canadian visitor went through a yellow crosswalk and hit a pedestrian. The visitor did not recognize that the yellow crosswalk designated a pedestrian walkway. He mentioned that it can happen with any foreign visitor. Meis noted that because of NAFTA the Federal Highway Administration undertook the effort to put together an informational brochure which can be used for Canada, the U.S. and Mexico. It explains some of the basic traffic control devices that drivers should know. The FHWA has given permission for states to personalize and print the brochures for distribution.

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OFF AGENDA ITEMS

John Wallo asked if any of the committee had heard of some DeAnza Trail signing. Gerry Meis noted that he was not aware of any official requests for any signs. Ray Mellen suggested that the committee agree to put the item in the workshop.

Ray Mellen reminded the committee that at the next meeting elections will be taking place. A chairman and vice chairman will be selected.

Dick Folkers mentioned that he was approached by a city who has a problem with air quality near a mobile plant, and they need a method of closing down the streets. They would like to use railroad gates and need an interpretation from the manual to see what is allowed. Folkers agreed to write the city back and say that the committee does not see using railroad gates for barricading a street as proper usage and can not recommend that solution.

Gerry Meis introduced Mel Araki from District 7 who would like to install internally illuminated raised pavement markers on a median barrier. The committee is to determine whether it is a new traffic control device. Araki intends to come back to request approval to experiment at the next meeting. Araki also would like to install speed striping at the approach of a crosswalk. Araki explained that the concept of speed striping is to give motorists the illusion that the driver is traveling faster than they really are. They would like to install them at crosswalks to slow down drivers. A benefit is that it will alert the driver to the crosswalk.

ADJOURNMENT

MOTION: By Teresa Becher, second by Gerry Meis for adjournment.
Motion carried 8-0. The meeting was adjourned at 1:45 p.m.

CALTRANS ACTIONS

Item 99-3 AUDIBLE PEDESTRIAN SIGNAL POLICY

Waiting for the parties in opposition to consult with one another.

Item 90-7 BICYCLE SIGNAL HEADS

Committee members to discuss the issue with their staff and report back at the next meeting.

Item 96-3 ILLUMINATED LEFT TURN YIELD SIGNS

Caltrans reviewing committee recommendation.

Item 98-1 GAPS FOR PEDESTRIAN CROSSINGS

Item to be resolved by Caltrans and then brought back for discussion.

Item 99-8 MUTCD EXPERIMENTAL PROCESS

Item moved to a later date.

Item 99-11 MUTCD ADOPTION BY CALTRANS

Workshop to be held concerning this item.

Item 99-9 LED ENHANCED PAVEMENT MARKERS

Caltrans to determine if device can be classified as a normal roadway pavement marker.